State of Illinois
Department of Natural Resources
Illinois State Geological Survey
William W. Shilts, Chief
Champaign

Topography of the Bedrock Surface in McLean County, Illinois

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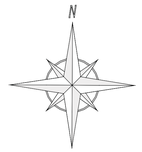
1997

Open File Series 1997-1d

Scale 1:100,000
1 inch equals approximately 1 1/2 miles
10 Kilometers
5 Miles
Lambert Conformal Conic Projection



Greater than 700
650 - 700
600 - 650
550 - 600
500 - 550
450 - 500
400 - 450
350 - 400
Less than 350

Contour Interval 50 Feet
Elevation Above Mean Sea Level
Contour Line
Township Line
Section Line
Data Point

Bedrock Topography

This map shows the topography of the bedrock surface in McLean County, Illinois (shaded area). Elevation of the bedrock surface ranges from more than 700 feet above mean sea level (MSL) in the south-central part of the county to less than 350 feet above MSL in the southwest part of the county. The most prominent features are the deep bedrock valleys in the county. See inset map from Kempton, et al, (1991). The edge of the Mahomet Bedrock Valley is located in the southeast corner and the southwest part of the county. The deepest part of the valley occurs southeast of the McLean County boundary. In the western part of the county lies the edge of the Mackinaw Bedrock Valley, which represents a section of the ancient Mississippi River Valley. Converging with the Mackinaw and Mahomet Valleys from the northeast is the Danvers Bedrock Valley, a tributary of the Ancient Mississippi Valley. At the convergence of these valleys major deposits of sand and gravel occur. These coarse-grained deposits are an important groundwater resource for the area (Herzog, et al, 1995).

The Mahomet Valley System has been subjected to several episodes of glaciation which both eroded the bedrock surface and filled the valleys with sand and gravel outwash and till deposits. In McLean County, deposits of sand, gravel and till of the pre-Illinois and Illinois glacial episodes filled the bedrock valleys and were subsequently overlain by deposits (mostly fine-grained till) of the Wisconsin glacial episode. These pre-Illinois and Illinois sand and gravel within the bedrock valleys are quite thick in some areas.

This map is based on bedrock surface elevation and was derived from data on depth to bedrock contained in the logs of water wells, engineering borings, and oil and gas wells idrilled n the county and in the surrounding townships. In addition, information was assembled from the logs of test wells drilled for an ISGS and Illinois State Water Survey groundwater resource assessment project in western McLean and eastern Tazewell Counties and the ISGS and U.S. Geological Survey (USGS) Champaign Quadrangle mapping project. The locations of wells and borings within the county and a one-mile buffer around the county are shown on the map.

The map of the bedrock topography represents the current understanding of the bedrock surface topography based on the data compiled to date. Ongoing ISGS projects continue to produce additional data and improve interpretation of the bedrock surface topography.

The bedrock surface within the county consists primarily of Pennsylvanian age limestone, shale and coal. In the extreme eastern edge of the county, Mississippian age limestone and Upper Devonian shale can be found at the bedrock surface. See inset map of bedrock geology from Willman, et al, (1967).

Public Land Survey boundaries were digitized from USGS 7.5-minute topographic maps. The slight skewness in the orientation of the map is due to the map projection (Lambert conformal conic). Public Land Survey lines in this part of the state do not run true north-south or east-west.

This map is one of a series of maps produced by the Illinois State Geological Survey (ISGS) as part of a geologic mapping program in McLean County, Illinois, to assist the county in landfill site screening. The bedrock topography map was used to create the thickness of Quaternary deposits map and a landfill capability map for the county.

References Cited

Kempton, J.P., W.H. Johnson, P.C. Heigold, and K. Cartwright, 1991. Mahomet Bedrock Valley in East-Central Illinois; Topography, Glacial Drift Stratigraphy, and Hydrogeology. In W. N. Melhorn and J.P. Kempton, editors, Geology and Hydrogeology of the Teays-Mahomet Bedrock Valley System. Geological Society of America, Special Paper 258, p. 100.

Willman, H.B., et al, 1967. Geologic Map of Illinois. Illinois State Geological Survey, Scale 1:500,000.

Herzog, B.L., S. D. Wilson, D.R. Larson, E.C. Smith, T.H. Larson, and M.L. Greenslate, 1995. Hydrogeology and Groundwater Availability in Southwest McLean and Southeast Tazewell Counties, Part 1: Aquifer Characterization. Illinois State Water Survey and Illinois State Geological Survey Cooperative Ground-Water Report 17, 70 p.

Appropriate Use of Map

This map is based on interpretations of available data obtained from a variety of sources. Most locations of data are not verified and interpretations based upon them are not guaranteed by the ISGS. This map provides a regional bedrock topography for regional evaluation and planning. Due to the 50- foot contour interval, it should not be used for detailed site-specific study.

Acknowledgments

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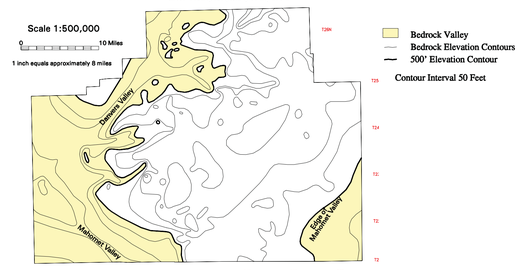
Bedrock Valleys in McLean County, Illinois

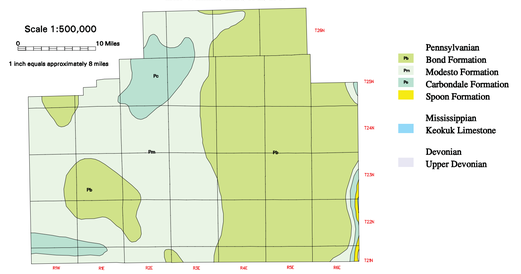
after Kempton, J.P., et al, 1991



Bedrock Valley
Bedrock Elevation Contours
500' Elevation Contour
Contour Interval 50 Feet

Bedrock Geology in McLean County, Illinois

after Willman, H.B., et al, 1967



Pennsylvanian
Ps Bond Formation
Pm Modesto Formation
Pb Carbondale Formation
Spoon Formation

Mississippian
Keokuk Limestone

Devonian
Upper Devonian